

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

Phone (530) 757-3650 Fax (530) 757-3670

FACILITY NUMBER: 00025

SIC CODE: 8221

AUTHORITY TO CONSTRUCT

C-13-75

IS HEREBY GRANTED TO

UNIVERSITY OF CALIFORNIA, DAVIS

Environmental Health and Safety

One Shields Avenue

Davis, CA 95616-5270

EQUIPMENT LOCATION: 675 Tercero Hall Circle, Campus Zone E067, CAAN 4049
(Central Heating and Cooling Plant); Davis, CA

TO OPERATE

PROCESS DESCRIPTION: Boiler: Natural Gas and Fuel Oil; modification of P-83-06 to include startup and shutdown flexibility

EQUIPMENT INVENTORY: One (1) 180 MMBtu/hr natural gas fire Rentech boiler with diesel back-up fuel, Model No. D, Serial No. 2006-53 (Boiler #4)

- Total Billing: Schedule 2, 180 MMBtu/hr -

CONTROL EQUIPMENT INVENTORY:

COEN Low NOx burner, Model No. QLN; selective catalytic reduction (SCR); and oxidation catalyst

PERMITTED EMISSION LIMITS:

Pollutant	Daily [lb]	Qtr #1 (Jan 1-Mar 31) [lb]	Qtr #2 (Apr 1-June 30) [lb]	Qtr #3 (July 1-Sept 30) [lb]	Qtr #4 (Oct 1-Dec 31) [lb]	Yearly [tons]
VOC	25.0	1,667	1,686	1,704	1,704	3.38
CO	36.5	1,517	1,533	1,549	1,549	3.07
NOx	78.0	2,565	2,591	2,617	2,617	5.20
SOx	7.6	253	256	258	258	0.51
PM10	179.8	2,948	2,974	3,000	3,000	5.96

PERMITTED PROCESS LIMITS:

	Daily	Qtr #1 (Jan 1-Mar 31)	Qtr #2 (Apr 1-June 30)	Qtr #3 (July 1-Sept 30)	Qtr #4 (Oct 1-Dec 31)	Yearly
Natural Gas [million cubic feet]	4.32	388.80	393.12	397.44	397.44	1,576.80
Diesel [gallons]	32,112	128,448	128,448	128,448	128,448	513,792

The following information is included to inform and assist the Permit Holder in achieving compliance with applicable provisions of Federal, State, and District Rules and Regulations. The following set of referenced regulations are not intended to be either comprehensive or exclusive, nor are they intended to be emission limiting permit conditions, but they are still applicable rules of the District. Occasionally laws are amended. The amended versions of the referenced rules shall be deemed to be in effect. **It is the Permit Holder's responsibility to comply with all applicable Rules and Regulations.** In the event that the District is named as a defendant in a lawsuit, administrative hearing, or other legal proceeding as a result, in whole or part, of this Authority to Construct/Permit to Operate ("Permit"), the District shall notify the applicant/permit holder ("Permit Holder") in writing within ten (10) calendar days of receiving service of the complaint in such lawsuit. The Permit Holder shall have thirty (30) calendar days from the receipt of such notice from the District to cancel or modify the Permit, and the Permit Holder will have no further obligation to the District. If the Permit Holder does not cancel or modify the Permit within thirty (30) calendar days of receiving such notice from the District, the Permit Holder shall hold harmless and defend the District, its Board members, Hearing Board members, APCO, officers, agents, employees, and representatives from liability for any award, damages, costs, and fees incurred by the District and/or awarded to any plaintiff named in the complaint, excepting loss, injury or damage caused by the negligence or willful misconduct of the District. However, the Permit Holder shall be entitled to assume the defense of the lawsuit at its expense with counsel reasonably satisfactory to both the District and Permit Holder and to lawfully settle and compromise any such lawsuit. Permit Holder shall provide District with the terms of any settlement thirty (30) calendar days prior to executing an agreement or entering into a stipulation. District's agreement to the settlement shall be required when the settlement binds the District to expend un-reimbursed District funds or to take a specified action which is reasonably unacceptable to the District, such as the modification of this Permit or District Rules and Regulations. Should Permit Holder elect not to assume the defense of the lawsuit at its expense, District shall invoice Permit Holder for reimbursement of all reasonable and documented costs related to District providing said defense.

1. The Permit Holder shall submit the Permit Notification Card after completing construction, installation, initial adjustment, or shakedown, and no later than 48 hours after beginning actual operation of the equipment listed in the Authority to Construct (ATC). For modifications of existing permits not requiring a physical change, the Permit Holder shall submit the Permit Notification Card no later than 48 hours after beginning operation of the equipment under the revised conditions of this ATC. The Permit Notification Card serves as the Permit to Operate (PTO) application, while the ATC and its conditions shall function as a temporary PTO until the final PTO is issued or denied. Operation beyond the shakedown period and the allowable 48 hours of actual operation without the submission of a Permit Notification Card will be considered operation without a valid permit and may be subject to enforcement action. [District Rule 3.1, §402]

2. The District requires an inspection of the equipment after completion of the construction and prior to the issuance of the Permit to Operate. [District Rule 3.1, §402]
3. An authorization to construct shall remain in effect only until the application for Permit to Operate is granted or denied; however, such an authorization shall not remain in effect beyond two years from the date of issuance unless the District finds that the time required for construction requires an extension and grants one or more extensions, for a total time not to exceed five years from the date of issuance. [District Rule 3.1, §407]

The following set of conditions are established by the District to provide enforceable operating parameters as authorized by California Health and Safety Code Section 42301 and District Rule 3.1, Section 402. If any of the rules and regulations referenced below are amended subsequent to the issuance date of this permit, resulting in the amended rule differing from or superseding the corresponding condition, then the Permit Holder shall be required to comply with the amended rule or regulation and shall no longer be required to comply with the superseded condition.

4. The Permit Holder shall not discharge into the atmosphere from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one (1) hour which is:
 - a. As dark or darker in shade than No. 1 on the Ringelmann Chart; or
 - b. Greater than 20% opacity. [District Rule 2.3 and District Rule 3.1, §402]
5. The Permit Holder shall not release or discharge into the atmosphere particulate matter in excess of 0.033 grains per cubic foot of exhaust as calculated at standard conditions. [District Rule 2.11 and District Rule 3.4]
6. The boiler shall be fired on Public Utility Commission (PUC) grade pipeline natural gas or diesel fuel. [District Rule 3.4]
7. Diesel fuel shall only be used when natural gas is unavailable for purchase or for equipment testing or emissions testing. [District Rule 3.4]
8. The boiler shall not combust diesel fuel exceeding 0.0015% sulfur content by weight. [District Rule 3.4]
9. The Permit Holder shall demonstrate compliance with the diesel fuel sulfur content limitation by obtaining, and maintaining at the facility, fuel receipts from the diesel fuel supplier certifying the sulfur content of the diesel fuel delivered and combusted by the boiler. [District Rule 3.4, 40 CFR Part 60.45b(k), 60.46b(I), 60.47b(g), and 60.48b(j)]
10. A non-resettable, totalizing gaseous fuel flow meter or other District approved fuel tracking technology shall be installed and utilized to measure the quantity (in cubic feet) of natural gas combusted by the boiler. [District Rule 3.4]
11. A non-resettable, totalizing liquid fuel flow meter or other District approved fuel tracking technology shall be installed and utilized to measure the quantity (in gallons) of diesel fuel combusted by the boiler. [District Rule 3.4]
12. The boiler shall have designated periods of startup and shutdown.

- a. A startup period shall be defined as the period, not to exceed two hours, between the initial firing of the boiler after a zero fuel flow period and the time the emissions control system reaches operating temperature.
 - b. A shutdown period shall be defined as the period, not to exceed two hours, during which the boiler is returned to a state of zero fuel flow and allowed to cool to ambient temperature. [District Rule 3.4]
13. The emission concentrations when firing on natural gas shall not exceed the following:
- a. VOC (as methane) - 10 parts per million by volume, dry, corrected to 3% O₂;
 - b. CO - 5 parts per million by volume, dry, corrected to 3% O₂;
 - c. NO_x (as NO₂) - 30 parts per million by volume, dry, corrected to 3% O₂ (any quarter-hour CEMS averaging period);
 - d. NO_x (as NO₂) - 9 parts per million by volume, dry, corrected to 3% O₂ (3-hour rolling average, excluding periods of startup and shutdown);
 - e. NO_x (as NO₂) - 5 parts per million by volume, dry, corrected to 3% O₂ (calendar quarter average);
 - f. NH₃ - 10 parts per million by volume, dry, corrected to 3% O₂.
[District Rule 3.4, §409.2]
14. The emission concentrations when firing on diesel fuel shall not exceed the following:
- a. VOC (as methane) - 12 parts per million by volume, dry, corrected to 3% O₂;
 - b. CO - 10 parts per million by volume, dry, corrected to 3% O₂; and
 - c. NO_x (as NO₂) - 13 parts per million by volume, dry, corrected to 3% O₂;
 - d. NH₃ - 10 parts per million by volume, dry, corrected to 3% O₂.
[District Rule 3.4, §409.2]
15. The Permit Holder shall install and maintain such facilities as are necessary for sampling and testing purposes. The number, size, and location of sampling ports shall be in accordance with Air Resources Board Test Method 1. The location and access to the sampling platform shall be in accordance with the General Industry Safety Orders of the State of California. [District Rule 3.1, §303.2]
16. The Permit Holder shall install, calibrate, maintain, and operate a Continuous Emission Monitoring System (CEMS) for NO_x and O₂ in the exhaust gas stack. [40 CFR Part 60.48b(b)(1)]
17. The CEMS shall be installed, evaluated, and operated as specified in 40 Code of Federal Regulations (CFR) Part 60.13. [40 CFR Part 60.13 and 40 CFR Part 60.48b(e)]
18. The CEMS shall comply with the requirements of 40 CFR Part 60, Appendix B and Appendix F. [40 CFR Part 60.13(a) and 40 CFR Part 60, Appendix B and Appendix F]
19. The CEMS span value for NO_x shall be 500 ppm, or an alternative span value as approved by the District. If a District approved alternative span value for NO_x is exceeded due to emissions from the boiler:
- a. The CEMS span value for NO_x shall revert to 500 ppm; or
 - b. The Permit Holder shall propose another alternative span value for District approval. [District Rule 3.4 and 40 CFR Part 60.48b(e)(2)]

20. The CEMS shall be operated, and data recorded, during all periods of operation of the boiler except for CEMS breakdowns and repairs. CEMS data shall be recorded during calibration checks, and zero and span adjustments. [40 CFR Part 60.48b(c)]
21. NOx emission rates measured by the CEMS shall be expressed in pounds per million British Thermal Unit (BTU), or other measurement unit that can be directly correlated to pounds per million BTU. [40 CFR Part 60.48b(d)]
22. The Permit Holder shall perform a source test within 45 days of initial firing, and at least once every twelve (12) months thereafter, to demonstrate compliance with the following emission limitations:
 - a. VOC concentration (ppmvd @ 3% O₂);
 - b. CO concentration (ppmvd @ 3% O₂);
 - c. NOx concentration (ppmvd @ 3% O₂);
 - d. NH₃ concentration (ppmvd @ 3% O₂). [District Rule 3.4]
23. Annual source tests shall include emissions testing for each fuel that was combusted by the boiler during the previous one (1) year period. If diesel was only used for testing and maintenance purposes during the previous one (1) year period, the annual source test only needs to be performed for natural gas. [District Rule 3.4]
24. Source testing shall be conducted using the following test methods (or equivalent methods as approved by the District):
 - a. VOC - EPA method 18 or 25, or CARB method 100;
 - b. CO - EPA method 10, or CARB method 100;
 - c. NOx (as NO₂) - EPA method 7E, or CARB method 100;
 - d. Stack gas oxygen - EPA method 3 or 3a, or CARB Method 100;
 - e. Flow rate - EPA method 19, or CARB Methods 1-4; and
 - f. NH₃ - Bay Area Air Quality Management District (BAAQMD) Method ST-1B.
[District Rule 2.27, §502.1 and §502.2, and District Rule 3.4]
25. The Permit Holder shall notify the District of any violation of the 3-hour rolling average or the quarter-hour NOx emission concentration limitation, as indicated by the CEMS, within 96 hours after such occurrence. [District Rule 3.4]
26. When NOx emission data is not obtained because of CEMS breakdowns, repairs, calibration checks, and zero and span adjustments, the Permit Holder shall obtain emission data by using a standby monitoring system, EPA Method 7, EPA Method 7A, or other approved reference methods to provide emission data for a minimum of 75 percent of the operating hours each day the boiler is operated, in at least 22 out of 30 successive days the boiler is operated. [40 CFR Part 60.48b(f)]
27. The District must be notified prior to any compliance source test and/or RATA, and a source test/RATA protocol must be submitted for approval 30 days prior to testing. The results of the source test/RATA shall be submitted to the District within 60 days of the test date. The protocol and report shall be mailed to the attention of the Supervising Air Quality Engineer. [District Rule 3.4]
28. All emission determinations shall be made in the as-found operating condition, except that emission determinations shall include at a minimum at least one source test conducted at

the maximum firing rate allowed by the District permit, and no compliance determination shall be established within two hours after a continuous period in which fuel flow to the unit is zero, or shut off, for thirty minutes or longer. [District Rule 2.27, §402.2]

29. The Permit Holder shall monitor and record the cumulative quarterly and annual natural gas (in cubic feet) and diesel (in gallons) fuel usage from their respective totalizing meter, or by any other acceptable methods approved by the District. The records shall be updated quarterly. [District Rule 3.4]
30. The Permit Holder shall maintain records of the following information for each day the boiler is operated:
 - a. Calendar date;
 - b. The average hourly nitrogen oxides (expressed as NO₂) emission rates (lb/MMBtu heat input) measured;
 - c. The 30-day average nitrogen oxides emission rates (lb/MMBtu heat input) calculated at the end of each boiler operating day from the measured hourly nitrogen oxide emission rates for the preceding 30 boiler operating days;
 - d. Identification of the boiler operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emission limitations of this permit, with the reasons for such excess emissions as well as a description of corrective actions taken;
 - e. Identification of the boiler operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken;
 - f. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data;
 - g. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted;
 - h. Identification of the times when the pollutant concentration exceeded full span of the CEMS;
 - i. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with 40 CFR Part 60 Appendix B, PERFORMANCE SPECIFICATIONS 2 or 3;
 - j. Results of daily CEMS drift tests and quarterly accuracy assessments as required under 40 CFR Part 60 appendix F, Procedure 1;
 - k. Time and duration of boiler start-up and shutdown events;
 - l. Time and duration of equipment and/or control equipment malfunction. [40 CFR Part 60.49b(g) and 40 CFR Part 60.7(b)]
31. All records required to be maintained by this permit shall be retained for the five (5) previous calendar years and made readily available for District inspection upon request. [District Rule 3.8, §302.6 and District Rule 3.4]
32. The Permit Holder shall submit to the District the records required by Condition 34 of this permit for each calendar year within 60 days of the end of the calendar year. [District Rule 3.4 and 40 CFR Part 60.49b(I)]

33. The Permit Holder shall submit to the District a written report for each calendar quarter, within 30 days of the end of the calendar quarter, which includes the following:
- a. The date, time intervals, and magnitude of excess emissions computed in accordance with 40 CFR Part 60.13(h);
 - b. The nature and cause of the excess emissions, and corrective actions taken;
 - c. The time and date of each period during which the CEMS was inoperative, except for zero and span checks, and the nature of system repairs and adjustments; and
 - d. A negative declaration when no excess emissions occurred, if applicable. [District Rule 3.4, 40 CFR Part 60.7(c), and 40 CFR Part 60.49b(h)]
34. A written quality assurance (QA) program shall be established in accordance with 40 CFR Part 60, Appendix B and 40 CFR Part 60, Appendix F. [40 CFR Part 60, Appendix B and Appendix F]
35. The Permit Holder shall comply with the applicable requirements of 40 CFR Part 60, Subpart A and Subpart Db. [40 CFR Part 60, Subpart A and Subpart Db]

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26, Part 4, Chapter 3, of the Health & Safety Codes of the State of California or the Rules and Regulations of the Yolo-Solano Air Quality Management District.

Mat Ehrhardt, P.E.
AIR POLLUTION CONTROL OFFICER

By: _____

Date of Issuance: December 10, 2012

ANNIVERSARY DATE: December 21